

CLAIMS:

1. An optical data storage medium for at least read out using a focused radiation beam with a wavelength λ and a Numerical Aperture (NA), entering through an entrance face of the medium during read out, comprising at least:

- a substrate with present on a side thereof:
- 5 -a first stack of layers named L0 comprising a first information layer,
- a radiation beam transparent cover layer adjacent the entrance face,
- a transmission stack named TS0 with a thickness d_{TS0} and containing all layers between L0 and the entrance face,

characterized in that

10 the maximum deviation of d_{TS0} from respectively the average values of d_{TS0} of a predetermined area of the medium does not exceed a predetermined value $DEVd_{TS0}$, measured over the information area of the medium and $DEVd_{TS0}$ is set in dependency of λ and NA.

15 2. An optical data storage medium according to claim 1, wherein $DEVd_{TS0} = \pm 3 \mu\text{m}$.

3. An optical data storage medium according to claim 1, with at least

- one further stack of layers named Ln and n an integer ≥ 1 , Ln comprising a further information layer and being present at a position closer to the entrance face than L0,
- 20 -a radiation beam transparent spacer layer between each of L0 to Ln, and
- a transmission stack named TSn with a thickness d_{TSn} and containing all layers between Ln and the entrance face, wherein the maximum deviation of d_{TSn} does not exceed a predetermined value $DEVd_{TSn}$, measured over the information area of the medium and $DEVd_{TSn}$ is set in dependency of λ and NA.

25 4. An optical data storage medium according to claim 3, wherein $DEVd_{TSn} = \pm 3 \mu\text{m}$.

5. An optical data storage medium according to claim 1, wherein $DEVd_{TS0} = \pm 2 \mu m$.

6. An optical data storage medium according to claim 3, wherein only one further
5 stack of layers named L1 is present, comprising a further information layer, $DEVd_{TS0} = \pm 2 \mu m$ and $DEVd_{TS1} = \pm 2 \mu m$, λ is in the range 400 nm - 410 nm and NA is in the range 0.84 – 0.86.

7. Use of an optical data storage medium as claimed in any one of the preceding
10 claims for reliable data read out from at least one information layer.